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**Press Release** **(Statement A)**

BOEING

# News Release

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## Boeing tests critical components for Advanced Rocket Engine

(ST.LOUIS, MO. March XX, 2002) – The Boeing Company (NYSE:BA) last week tested a state-of-the-art liquid oxygen turbopump, marking a significant step forward in the development of next-generation rocket engine technology. A team of Boeing's Rocketdyne Propulsion & Power unit, Air Force, and NASA personnel conducted the hot-fire testing at NASA's John C. Stennis Space Center (SSC) in Mississippi.

This test, one of nine that have been planned, follows a related series of hot-fire tests in which a Rocketdyne-built pre-burner -- which provides oxygen-rich gasses to the oxidizer turbopump turbine drive -- went "six for six" in that series. The Rocketdyne pre-burner was subsequently attached to the new oxidizer turbopump for its testing.

Both the oxidizer turbopump and the pre-burner test series are for the Air Force Research Laboratory's (AFRL) Integrated Powerhead Demonstration (IPD).

Upon completion of its hot-fire test series, the oxidizer turbopump will become part of the IPD engine system and help to provide advancement of key technologies that could find application in future Air Force rocket applications or NASA's Next Generation Launch Technology program.

Bob Brengle, program manager for Rocketdyne's role in the IPD, said the new turbopump is leading edge. "We've combined proven technologies with exciting new innovations in the component," Brengle said, "including hydrostatic bearings that are virtually frictionless. In addition, a number of the internal parts use a new material that will help provide superior performance. We anticipate excellent performance, even in the oxygen-rich environment where it will do its work.

(MORE)

"This new turbopump could be a prototype for a whole new generation of rocket engines," said Steve Bouley, division director for Advanced Propulsion Development at Rocketdyne. "In future launch systems, there will continue to be a premium on low cost, simplicity of design, high performance and reliability. We believe that this component hits the mark, and that the continuing performance tests will bear that out."

"For its part, the pre-burner that we tested is the first large-scale, oxidizer-rich type to actually be developed and hot-fire tested in the U.S.," added Brengle. "Smaller ones have been tested at Rocketdyne facilities, but this series of tests is a first for one of this magnitude." He said that the goal of the test series was to characterize the pre-burner's "behavior" prior to its connection to the turbopump.

Added AFRL's Jeff Thornburg, IPD project manager, "The IPD program supports the Department of Defense's Integrated High Performance Rocket Propulsion Technology (IHPRPT) program. The goal of the IHPRPT program is to satisfy our Phase One milestones for doubling the capability of boost engines for access to space. IPD has also demonstrated a very successful partnership between AFRL, Rocketdyne, NASA's Stennis Space Center, and NASA's Marshall Space Flight Center."

The IHPRPT program is a DoD/NASA/Industry coordinated effort to develop revolutionary and innovative technologies by the year 2010 that will generate significant enhancements of rocket propulsion capabilities over current state-of-the-art technologies.

Rocketdyne Propulsion & Power is a global leader in the design, development and manufacture of rocket propulsion and space power systems and is part of the Integrated Defense System (IDS) of The Boeing Company. In addition to the Space Shuttle Main Engine, Rocketdyne provides propulsion systems for Delta and Atlas launch vehicles.

(MORE)

A unit of The Boeing Company, Integrated Defense Systems is one the world's largest space and defense businesses. Headquartered in St. Louis, Boeing Integrated Defense Systems is a $23 billion business. It provides systems solutions to its global military, government and commercial customers. It is a leading provider of intelligence, surveillance and reconnaissance; the world's largest military aircraft manufacturer; the world's largest satellite manufacturer and a leading provider of space-based communications; the primary systems integrator for U.S. missile defense; NASA's largest contractor; and a global leader in launch services.

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# New Polynitrogen Compounds


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